

## GHS Classification

**ID90**

**Isoprene**

**CAS 78-79-5**

Date Classified: Apr. 20, 2006 (Environmental Hazards: Mar. 31, 2006)

**Physical Hazards**

Reference Manual: GHS Classification Manual (Feb. 10, 2006)

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Explosives	Not applicable	-	-	-	Containing no chemical groups with explosive properties
2 Flammable gases	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
5 Gases under pressure	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
6 Flammable liquids	Category 1	Flame	Danger	Extremely flammable liquid and vapour	The flash point is -54degC (c.c.) (ICSC, 2004) and the boiling point is 34degC, which is classified into Category 1. Those containing stabilizers are classified into Class 3 and Packing Group I (UN#1218) (UN Recommendations on the Transport of Dangerous Goods)
7 Flammable solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
8 Self-reactive substances and mixtures	Classification not possible	-	-	-	Classification not possible due to lack of data, though containing unsaturated bonds. Those containing stabilizers are classified into Class 3 (UN Recommendations on the Transport of Dangerous Goods, UN#1218)
9 Pyrophoric liquids	Not classified	-	-	-	Not pyrophoric when in contact with air at ordinary temperatures: the auto-ignition temperature is 220degC (ICSC, 2004)
10 Pyrophoric solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
11 Self-heating substances and mixtures	Classification not possible	-	-	-	Test methods applicable to liquid substances are not available
12 Substances and mixtures, which in contact with water, emit flammable gases	Not applicable	-	-	-	Containing no metals or metalloids (B, Si, P, Ge, As, Se, Sn, Sb, Te, Bi, Po, At)
13 Oxidizing liquids	Not applicable	-	-	-	Organic compounds containing no oxygen, fluorine and chlorine
14 Oxidizing solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
15 Organic peroxides	Not applicable	-	-	-	Organic compounds containing no "-O-O-" structure
16 Corrosive to metals	Classification not possible	-	-	-	Test methods applicable to gaseous substances are not available - boiling point: 34degC (ICSC, 2004), test temperature: 55degC

## Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 5	-	Warning	May be harmful if swallowed	Based on the testing data of rat LD50 (oral route) of 2,043mg/kg (CERI-NITE Hazard Assessment No.45 (2005)).
1 Acute toxicity (dermal)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Due to the fact that the substance is "liquid" according to the GHS definition and inhalation of its gas is not expected.
1 Acute toxicity (inhalation: vapour)	Not classified	-	-	-	Based on the rat LC50 (4 hour inhalation of vapour) value of 63,600ppm (180mg/L) (CERI-NITE Hazard Assessment No.45 (2005) was lower than 90% of the saturated vapour concentration (530,000ppm) under a saturated vapour pressure of 53.2kPa (20degC) (ICSC, 2004), the substance was considered as "vapour containing substantially no mist" and was classified based on standard values expressed in ppm.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 3	-	Warning	Causes mild skin irritation	Based on the evidence of "mild irritation" from tests on human volunteers (CERI-NITE Hazard Assessment No.45 (2005)).
3 Serious eye damage / eye irritation	Category 2B	-	Warning	Causes eye irritation	Based on the evidence of "mild irritation" from tests on human volunteers (CERI-NITE Hazard Assessment No.45 (2005)).
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Classification not possible	(Respiratory sensitization) - (Skin sensitization) -	(Respiratory sensitization) - (Skin sensitization)	(Respiratory sensitization) - (Skin sensitization) -	Respiratory sensitization: No data available Skin sensitization: No data available
5 Germ cell mutagenicity	Category 2	Health hazard	Warning	Suspected of causing genetic defects	Based on the absence of data on multi-generation mutagenicity tests and germ cell mutagenicity tests in vivo, positive data on somatic cell mutagenicity tests in vivo (micronucleus tests) and the absence of data on germ cell genotoxicity tests in vivo, described in CERI-NITE Hazard Assessment No.45 (2005).
6 Carcinogenicity	Category 2	Health hazard	Warning	Suspected of causing cancer	Due to the fact that the substance is classified as Category R by NTP (2005) and Group 2B by IARC (1999).
7 Toxic to reproduction	Classification not possible	-	-	-	Because of the absence of data on reproductive toxicity; the results of rat developmental toxicity tests (CERI-NITE Hazard Assessment No.45 (2005)) suggest a very low or negligible effect on the embryo (body weight reduction, delayed ossification, etc.).

8	Specific target organs/systemic toxicity following single exposure	Category 3 (narcotic effects, respiratory tract irritation)	Exclamation mark	Warning	(Respiratory tract irritation) May cause respiratory irritation (Narcotic effects) May cause drowsiness or dizziness	Based on the human evidence including "adverse effects on the central nervous system, dyspnea, lowering of consciousness, burning sensation, cough, dizziness, smothering feeling, nausea, breathlessness, pharyngalgia" (MOE Risk Assessment vol. 1 (2002)). Respiratory irritation, suppression of the central nervous system and narcotic effects are observed.
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs, nervous system) Category 2 (liver, blood system)	Health hazard	Danger Warning	Causes damage to organs through prolonged or repeated exposure (respiratory organs, nervous system) May cause damage to organs through prolonged or repeated exposure (liver, blood system)	Based on human evidence including "catarrhal inflammation, atrophic degeneration of the upper respiratory tract, a reduced sense of smell, delay in the reflex latency, a decrease in blood pressure" (CERI Hazard Data 97-5 (2002)), and the evidence from animal studies including "hepatocellular vacuolar degeneration, a decrease in red blood cell count, low hemoglobin concentrations," "macrocytic anemia," "spinal degeneration" (CERI-NITE Hazard Assessment No.45 (2005)). The effects on "nervous systems" and "liver and blood systems" are observed at dosing levels within the guidance value ranges for Category 1 and Category 2, respectively.
10	Aspiration hazard	Classification not possible	-	-	-	No data available

### Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
11 Hazardous to the aquatic environment (acute)	Category 2	-	-	Toxic to aquatic life	It was classified into Category 2 from 48 hours EC50=3.2mg/L of the crustacea (Daphnia magna) (MOE eco-toxicity tests of chemicals, 2000).
11 Hazardous to the aquatic environment (chronic)	Category 2	Environment	-	Toxic to aquatic life with long lasting effects	Although acute toxicity was Category 2 and the bio-accumulation potential was low (BCF=20(Existing Chemical Safety Inspections Data)), since there was no rapidly degrading (the decomposition by BOD: 2%(Existing Chemical Safety Inspections Data)), it was classified into Category 2.